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Maintenance

AIR AND SPACE MAINTENANCE

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This directive provides overarching guidance for the maintenance of air and space equipment. It implements policies in DoD Directive 4151.18, *Maintenance of Military Materiel*, 12 August 1992. This policy directive applies to all Air Force and DoD contractor activities, including the Air National Guard and the Air Force Reserve. Records Disposition: ensure all records created by this publication are maintained and disposed of IAW AFMAN 37-139, *Records Disposition Schedule*.

SUMMARY OF REVISIONS

All sections have been revised to emphasize readiness and support to air expeditionary forces. Policy, objectives and responsibilities stress DoD guidance and measurement/reporting of results. An expanded list of publications, acronyms and terms ([Attachment 1](#)) and metrics ([Attachment 2](#)) is attached.

1. Policy. This publication establishes policy and assigns responsibilities for the maintenance of air and space equipment to meet operational needs, including mobilization and surge requirements.

- 1.1. Maintenance shall be performed at the lowest level to optimize readiness and resources.
- 1.2. Organizations, tools, equipment and skills shall be standardized where possible.
- 1.3. A depot maintenance capability shall be maintained to meet military contingency requirements.
 - 1.3.1. Performance-based agreements, including partnerships, shall be used as a means to achieve economies and efficiencies.
- 1.4. Inter- and intra-Service and joint contracting maintenance support arrangements shall be established.

2. Objectives. Our overarching objective is to maintain air and space equipment in a safe, serviceable and ready condition to meet mission needs. Toward that end, the AF shall:

- 2.1. Support *readiness* objectives by maintaining equipment in optimum condition (A2.1.).
- 2.2. Assign *skilled personnel* necessary to support expeditionary air forces (A2.2.).
- 2.3. Manage *fleet health* to ensure long-term capability of air and space equipment (A2.3.).

3. Roles and Responsibilities.

3.1. Headquarters Air Force. The DCS/Installations and Logistics (AF/IL) is the chief HAF agency with responsibility for policy, resources and management of air and space equipment.

3.1.1. Policy. Prepares, publishes and reviews AF-level policy. This publication should be reviewed annually and revised, if necessary.

3.1.2. Resources. Advocates resources to sustain maintenance operations.

3.1.2.1. Arranges cost-effective maintenance support between services.

3.1.2.2. Analyzes or summarizes maintenance trends.

3.2. Major Command. MAJCOMs provide manpower, resources and training consistent with the assigned mission. Provide detailed policy, funding and analysis to optimize readiness.

3.2.1. Air Force Materiel Command. AFMC will provide adequate support for logistics, engineering and research, development, test and evaluation to support all MAJCOMs.

3.2.1.1. Oversees depot-level maintenance activities and manages air logistics centers. Improves efficiency and effectiveness of depot maintenance through inter-servicing and competition. Annually determines and quantifies core capability.

3.2.1.2. Serves as the final determining authority for the content of technical orders.

3.2.1.3. Ensures operational safety, suitability and effectiveness.

3.2.2. Air Education and Training Command. AETC will provide formal training for technicians to maintain air and space equipment.

3.3. Wings. Air Force Wings are the primary maintenance level, as air and space equipment is ultimately maintained at the unit level.

3.3.1. Base-level aircraft maintenance activities must have the capability to launch and recover aircraft and sustain the preventive maintenance program.

3.3.2. All units shall strictly enforce compliance with technical manuals and supplements.

4. Measurement and Reporting.

4.1. Air Force organizations shall measure and report maintenance data to evaluate maintenance performance and compliance consistent with this policy.

4.1.1. Air Staff, MAJCOMs and Wings/Units will prepare and report metrics in accordance with [Attachment 2](#).

James G. Roche
Secretary of the Air Force

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 10-602, *Determining Mission Capability and Supportability Requirements*
AFI 21-101, *Aerospace Equipment Maintenance Management*
AFI 21-116, *Maintenance Management of Communications – Electronics*
AFI 21-118, *Improving Aerospace Equipment Reliability and Maintainability*
AFI 21-201, *Management and Maintenance of Non-Nuclear Munitions*
AFI 36-2232, *Maintenance Training*
AFI 38-101, *Air Force Organization*
AFI 63-111, *Contract Support for Systems and Equipment*
AFMAN 37-139, *Records Disposition Schedule*.
AFPD 20-3, *Air Force Weapon System Repairable Asset Management*
AFPD 63-12, *Assurance Of Operational Safety, Suitability, & Effectiveness*
DoDD 4151.18, *Maintenance of Military Materiel*
DoDD 5025.12, *Standardization of Military and Associated Terminology*
JP 1-02, *DOD Dictionary of Military and Associated Terms*

Abbreviations and Acronymns

AETC—Air Education and Training Command
AFI—Air Force Instruction
AFMAN—Air Force Manual
AFMC—Air Force Materiel Command
AFPD—Air Force Policy Directive
ALC—Air Logistics Center
CAMS—Core Automated Maintenance System
CANN—Cannibalization
DLR—Depot-level Repairable
DoDD—Department of Defense Directive
EDW—Enterprise Data Warehouse
FY—Fiscal Year
HAF—Headquarters Air Force

IAW—In Accordance With

IDEAS—Interactive Demographic Analysis System

IMDS—Integrated Maintenance Data System

JP—Joint Publication

MIS—Maintenance Information System

MAJCOM—Major Command

MC—Mission Capable

NMC—Not Mission Capable

NMCM—Not Mission Capable Maintenance

OSS&E—Operational Safety, Suitability & Effectiveness

RAW—Retrieval Applications Website

REMIS—Reliability & Maintainability Information System

TAV—Total Asset Visibility

TO—Technical Order

USAF—United States Air Force

Terms

Air and Space Equipment—Equipment used and maintained to meet the Air Force mission. It includes aircraft, missiles, space equipment, communications-electronic equipment, avionics, engines, training equipment, support equipment, aircraft and space ground equipment, sound suppressor systems, test, measurement and diagnostic equipment and major end-items of all equipment.

Availability—An expression of the percentage of time a piece of air or space equipment is ready to perform at least some part of its intended work for its operational user. This percentage is expressed as a mission capability rate.

Cannibalization—Authorized removals of a specific assembly, subassembly, or part from one weapon system, system, support system, or equipment end-item for installation on another end-item to meet priority mission requirements with an obligation to replace the removed item.

Core Capability—An integral part of a depot maintenance skill and resource base that shall be maintained within depot activities to meet contingency requirements. Core comprises a minimum level of mission-essential capability within DoD.

Depot Maintenance—Maintenance performed on materiel requiring major overhaul or a complete rebuild of parts, assemblies, subassemblies, and end-items, including the manufacture of parts, modifications, testing, and reclamation as required. Depot maintenance serves to support lower categories of maintenance by providing technical assistance and performing maintenance beyond their responsibility. Depot maintenance provides stocks of serviceable equipment by using more extensive facilities for repair than are available in lower level maintenance activities.

Fleet Health—The overall condition of aircraft, equipment, assets, and/or forces to execute a long-term course of action (e.g., number of delayed discrepancies, number of serviceable assets versus requirements, and/or level of training).

Intermediate Maintenance—Maintenance that is the responsibility of and performed by designated maintenance activities in direct support of using organizations. Its phases normally consist of: calibration, repair, or replacement of damaged or unserviceable parts, components, or assemblies; the emergency manufacture of non-available parts; and providing technical assistance to using organizations.

Interoperability—The ability of systems, units, or forces to provide services to and accept services from other systems, units, or forces and to use the services so exchanged to enable them to operate effectively together.

Inter-Service Maintenance Support—Maintenance either recurring or nonrecurring, performed by the organic capability of one Military Service, or element of it, in support of another Military Service or element.

Maintenance Engineering—The application of techniques, engineering skills and efforts organized to ensure that the design and development of weapon systems and equipment provide adequately for their effective and economical maintenance.

Maintenance Training—Any proficiency, qualification, or certification required by a technician to perform duties in their primary Air Force Specialty.

Materiel—Hardware, equipment, software, or any combination thereof, associated with DoD weapon systems and their related spares, repair parts, and support necessary to equip, operate, maintain and support military activities for administrative, support or combat purposes.

Mission Capable Rate—The MC rate is defined as the combination of the fully mission capable (FMC) and partially mission capable (PMC) rates. It represents how long, in percent of possessed time, a system can perform at least one of its assigned missions.

Organizational Maintenance—The first level of maintenance performed *on-equipment* (directly on aerospace vehicles or support equipment). This type of maintenance generally includes minor repairs, inspection, testing or calibration.

Readiness—The ability of US military forces to fight and meet the demands of the national military strategy. Unit readiness is the ability to provide capabilities required by the combatant commanders to execute their assigned missions.

Reliability-Centered Maintenance—A logical discipline for developing a scheduled-maintenance program that will realize the inherent reliability levels of complex equipment at minimum cost.

Technical Order—An AF publication that gives specific technical directives and information on inspection, storage, operation, modification and maintenance of given AF items and equipment.

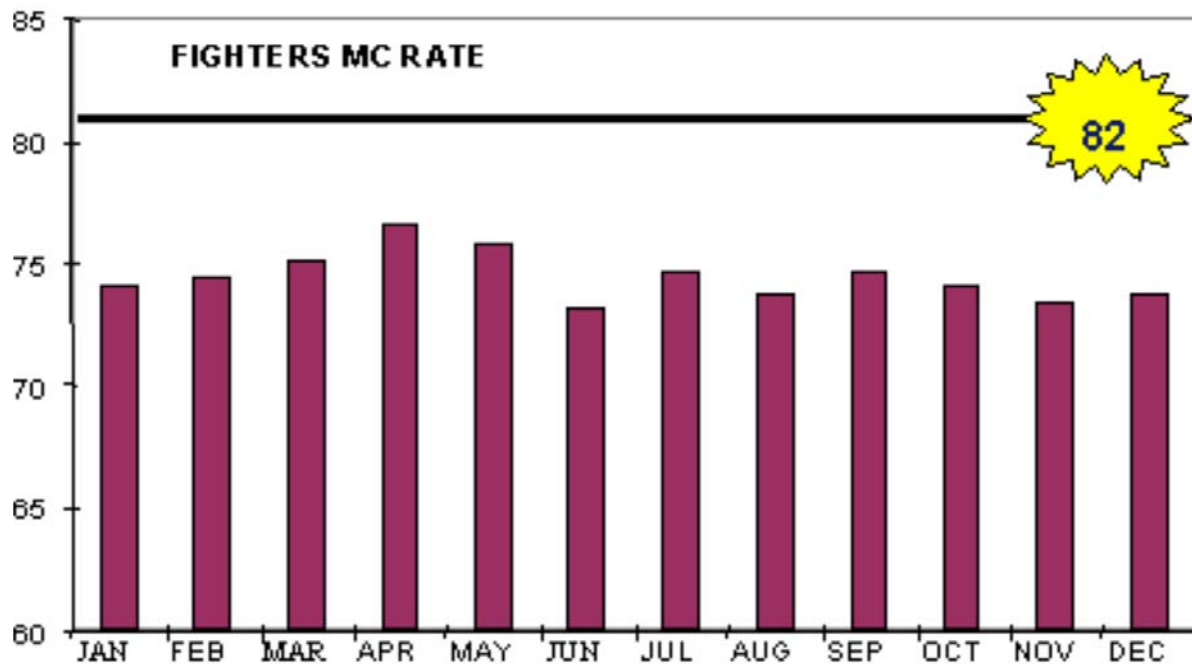
Total Asset Visibility—The capability to provide users with timely and accurate information on the location, movement, status, and identity of units, personnel, equipment, materiel, and supplies.

Attachment 2

MEASURING AND DISPLAYING COMPLIANCE WITH POLICY

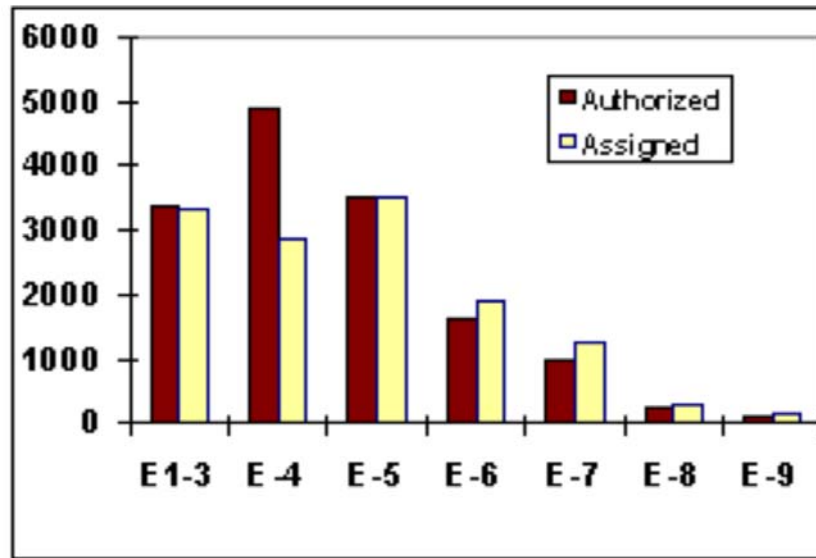
A2.1. Readiness shall be determined through the use of **mission capability rates and other management indicators**. These rates shall be reported by mission design series (e.g., F-15E) and/or organization (e.g., 1st FW). Sources for this measurement include the AF Portal and Maintenance Information Systems such as CAMS/IMDS and EDW/REMIS.

Figure A2.1. Sample Metric of Annual Mission Capability Rate for Fighter Aircraft.



A2.2. Skilled personnel shall be determined by **training and availability**. As a minimum, manning data shall be reported by specialty and skill level. Sources for this measurement include the Interactive Demographic Analysis System and Retrieval Applications Website.

Figure A2.2. Sample Metric of Availability of Munitions Maintenance Personnel (2W0).



| MANNING | 3-Levels | 5-Levels | 7-Levels |
|------------|----------|----------|----------|
| Authorized | 3373 | 8412 | 2610 |
| Assigned | 3316 | 6403 | 3195 |
| % Assigned | 98% | 76% | 122% |

A2.3. Fleet health shall be determined through the use of **management indicators such as deferred discrepancies, break/fix rates, cannibalization rates and abort rates**. These indicators shall be closely monitored and reported to ensure the long-term capability and sustainability of equipment. Sources for these indicators include the AF Portal and Maintenance Information Systems (MIS) such as CAMS/IMDS, EDW/REMIS and G081.

Figure A2.3. Sample Metric of Cannibalization Rate for C-5 Aircraft (per 100 sorties).

